

My name is Daria Sharipova and my report will be about the book "Order from Chaos" by Ilya Prigozhin and Isabel Stengers. Or rather, about its part – the introduction called "The Triumph of Reason"

Слайд 1: Ilya Romanovich Prigozhin is a Belgian physicist and chemist of Russian origin. He was awarded the Nobel Prize in Chemistry for his work in the field of nonequilibrium thermodynamics. A group of researchers at the Free University of Brussels, working under his leadership, gained worldwide fame as the Brussels Scientific School. Since 1959 - Director of the International Institute of Physical Chemistry, founded by Solvay. Since 1967 - Director of the Center for Thermodynamics and Statistical Physics at the University of Texas, since 1982 - a foreign member of the USSR Academy of Sciences.

Being an enthusiastic, versatile and universally thinking scientist, Prigozhin attempted to build bridges between natural sciences and humanities. From a specific model of complex behavior in chemistry, Prigozhin advanced to deep philosophical generalizations about the change of the scientific paradigm and radical changes in the vision of the world.

Prigozhin develops a philosophy of instability. He pays special attention to the consideration of the problem of time, the origin of the arrow of time, the nature of irreversibility. The essence of the scientific revolution taking place today, from his point of view, is that modern science of the complex refutes determinism and insists that creativity manifests itself at any level of natural organization.

Слайд 2: Isabel Stengers is the author of a number of studies on the history of science, books on the relations of science with government and society. Both books, written by her together with I. Prigozhin, have been translated into Russian: "Order from Chaos" and "Time. Chaos. Quantum". Stengers is one of the most significant philosophically oriented historians of science, and her work undoubtedly deserves the closest attention. Stengers is not only a historian of science and a philosopher, she is a chemist by training and has collaborated with Ilya Prigozhin for many years.

Слайд 3: Order out of chaos. The book by the famous Belgian physicist and chemist, Nobel Prize laureate I. Prigozhin and his co-author I. Stengers is devoted to the consideration of science and philosophy of the XIX and XX centuries from the standpoint of science of the second half of

the XX century, as well as the problems and peculiarities of modern scientific thinking.

Слайд 4: The purpose of the book is to comprehend the path traversed by science and cognition, and to set out the requirements of modern science and society to restore on a new basis the union of man with nature, in which there will be unity not only of nature and man, but also of science, culture and society. The authors give a deep historical and philosophical consideration of scientific knowledge, starting with Newton and Laplace and ending with his later criticism by modern Western philosophers. It is recommended to specialists of natural sciences and humanities, as well as to a wide range of readers interested in the problems of modern science.

In my report, I will consider the introduction of the book - "The Triumph of Reason". It prepares the reader for future chapters of the book, telling briefly about important parts in the history of science, such as: classical science, the development of science until the end of the 20th century, and much more. The introduction itself is divided into five semantic parts, I will tell you about the first three parts.

Слайд 5: The formation and development of classical science was aimed at describing the world, learning how to predict it. But this idea "broke down": "everywhere you look, evolution, a variety of forms and instabilities are found." The vision of the world is undergoing changes towards multiplicity and complexity. At the same time, new concepts have emerged that are now important for understanding our physical, natural world.

Слайд 6: We are well aware that the Greek atomists sought to free man from the fear of an order that surpasses the orders that are established by people and nature. For example, Lucretius repeatedly repeats that there is nothing in the world but ever-changing combinations of atoms in the void. Science made the attitude of the ancient atomists the truth, which in turn gave rise to the "anxiety of modern people," as Lenoble called this phenomenon - "how do we realize ourselves in the random world of atoms? Shouldn't science be defined through the gap between man and nature?"

Слайд 7: Pascal said that neither nature nor the universe can be compared even with the lowest mind. because even this mind carries some

knowledge about all this, and the universe does not know anything about it. One of the main tasks of this book is to show the harmony of man and nature.

Слайд 8: Alexander Coire has designated a new term for science - "experimentation": science is based on the discovery of new, specific forms of communication with nature, i.e. on the belief that nature answers experimental questions. Nature answers correctly posed questions and thus science becomes like a game of two partners, in which we need to guess the behavior of reality that does not depend on our beliefs and hopes.

Слайд 9: Science, having started a dialogue with nature, opened a silent, dead world (classical science), it revealed to people a passive nature that can be compared to an automaton: being programmed, the automaton strictly follows the prescriptions laid down in the program. Karl Popper was forced to admit that the scientific method is applicable only due to a random coincidence between theoretical models and experimental results.

Слайд 10: От каких предрассудков в науке удалось избавиться? - На определенном уровне мир устроен просто подчиняется обратимым во времени законам. Ныне необратимость и случайность рассматриваются не как исключение, а как общее правило.

Слайд 11: Arthur Eddington introduced into science the division into primary and secondary laws: primary laws are those laws that apply to individual particles, secondary laws are those that apply to whole aggregates of particles and atoms. Emphasizing the role of secondary laws, we can say that the description of the behavior of elementary particles is not sufficient to describe and understand the behavior of the system as a whole. By the end of the twentieth century, we learned to better understand the significance of natural science revolutions: the creation of quantum mechanics and the discovery of the theory of relativity. Quantum mechanics has given us a theoretical basis for describing the endless transformations of some particles into others. The theory of relativity has given us a foundation on which we can trace the thermal history of the universe in its early stages.